

## fluchloralin (Basalin) Herbicide Profile 6/85

### CHEMICAL FACT SHEET FOR: FLUCHLORALIN

FACT SHEET NUMBER: 52

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#### 1. DESCRIPTION OF CHEMICAL

- Generic Name: Fluchloralin
- Common Name: fluchloralin
- Trade Name: Basalin
- EPA Shaughnessy Code: 108701
- Chemical Abstracts Service (CAS) Number: 33245-39-5
- Year of Initial Registration: 1970
- Pesticide Type: Herbicide
- Chemical Family: chloroaniline
- U.S. and Foreign Producers: BASF Wyandotte, Inc.

#### 2. USE PATTERNS AND FORMULATIONS

- Application sites: Dry and succulent peas and beans, cotton, okra, peanuts, soybeans, and sunflowers.
- Types of formulations: Emulsifiable concentrate (4 lbs. a.i. per gallon).
- Types and methods of application: Preplant broadcast or banded spray, using ground equipment. Soil incorporation recommended.
- Application rates: 0.5-1.5 lbs. a.i./A on beans (including soybeans), okra, peas, peanuts, and sunflowers.
- Usual carriers: Water

#### 3. SCIENCE FINDINGS

##### Chemical Characteristics

- Physical state: crystalline solid
- Color: orange-yellow
- Odor: faint, unusual
- Melting point: 42-43 C
- Solubility (at 20 C): ethyl acetate >100 g/100 g, benzene 100 g/100 g, cyclohexane 25.1 g/100 g, ether >100 g/100 g, acetone >100 g/100 g, chloroform >100 g/100 g, ethanol 17.7 g/100 g, water <7 g/100 g.
- Vapor pressure:  $6 \times 10^{-6}$  mm Hg at 20 degrees C,  $2.5 \times 10^{-5}$  mm Hg at 30 degrees C
- Stability: Sensitive to ultraviolet light. Stable in aqueous solution over range of pH 5 to 9.

##### Toxicological Characteristics

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- Acute effects:
  - Acute oral LD50: data gap
  - Acute dermal LD50: data gap
  - Dermal irritation: data gap
  - Acute inhalation toxicity: data gap
  - Primary eye irritation: data gap
- Chronic effects:
  - Oncogenicity: data gap
  - Teratology: data gap
  - Reproductive effects: data gap
  - Mutagenicity: data gap
  - Feeding studies: data gap
- Major routes of exposure: dermal, ocular, and ingestion.

#### Physiological and Biochemical Behavioral Characteristics

- Foliar absorption: Not applicable; fluchloralin is soil-incorporated.
- Translocation: Residues are taken up and translocated through the roots and shoots of cotton and soybean plants. Parent compound and some metabolites have been identified in cotton and soybean foliage following exposure of the roots to fluchloralin.
- Mechanism of pesticidal action: Believed to affect seed germination and other physiological growth processes.
- Metabolism and persistence in plants and animals: Plant metabolism is not adequately understood. Fluchloralin residues did not transfer to ruminant tissues at exaggerated rates (67 X the expected intake by beef cattle). Degradation in animals is stepwise through N-dealkylation and N-hydrolysis.

#### Environmental Characteristics

- Adsorption and leaching in basic soil types: Fluchloralin (unaged) and fluchloralin residues (aged 30 days) are relatively immobile to slightly mobile in loamy sand and sandy soils, but the degradate 2,6-dinitro-4-trifluoromethylphenol is highly mobile in loamy sandy soil and mobile in sandy clay loam soil. Fluchloralin is slightly mobile in runoff from plots (5-12% slope) of silt loam soil.
- Microbial breakdown: No data
- Loss from photodecomposition and/or volatilization: Fluchloralin photodegrades rapidly (half-life 27 minutes) in water (pH 5.6) when exposed to artificial sunlight. Photodegradation of solid fluchloralin film is slower (half-life 48 hours in artificial sunlight). No valid volatilization data are available.
- Bioaccumulation: No valid data
- Resultant average persistence: Half-life ranges from <32 to 120 days, depending on soil type.
- Half-life in water: Stable in water over pH range from 5.0 to 9.0, if not exposed to light

#### Ecological Characteristics

- Hazards to birds: data gap
- Hazards to aquatic invertebrates: data gap
- Hazards to fish: High toxicity poses potential threat to fish populations. Hazard cannot be evaluated until receipt of certain

environmental fate data.

- Potential problems with endangered species: USDI has made a jeopardy assessment, finding threats to slackwater darter and 11 freshwater mussels from use of fluchloralin on soybeans.

#### Tolerance Assessment

- List of crops and tolerances:

Crop	Tolerance (ppm)
Cotton, seed	0.05N
Peanuts	0.05
Peanuts, forage	0.05
Peanuts, hay	0.05
Peanuts, hulls	0.1
Soybeans	0.05N
Sunflower, seeds	0.05
Vegetables, seed & pod (dry/succulent)	0.05
Vegetables, seed & pod, forage	0.1
Vegetables, seed & pod, hay	0.1

NOTE: N = negligible

- List of food contact uses: beans (dry and succulent), okra, peas (dry and succulent), peanuts, soybeans, and sunflower seeds.
- Results of tolerance assessment: Current PADI is 0.0026 mg/kg/day, based on a NOEL of 5.250 mg/kg/day (210 ppm) and an LEL of 15.75 mg/kg/day (hemisiderosis in the liver) using a safety factor of 2000. The portion of the PADI currently occupied is <3%. However, the feeding study on which the PADI was based has been declared invalid, and no other toxicological data are available.

#### Problems Known to have Occurred from Use

- No PIMS data available.

#### Summary Science Statement

No valid acute or chronic toxicity data are available. One metabolite has shown potential for leaching through soil, but the toxicological properties of this metabolite are unknown. Toxicity to fish is very high.

#### 4. SUMMARY OF REGULATORY POSITION AND RATIONALE

- Use classification: Not classified
- Use, formulation, or geographic restrictions: Manufacturing-use products may only be formulated into end-use products intended for use as a herbicide on dry and succulent peas and beans, cotton, okra, peanuts, soybeans, and sunflowers.
- Unique label warning statements:
  - Use pattern statements: Labels of manufacturing-use products must bear the statement: For formulation into end-use herbicide products intended only for use on kidney, lima, navy, green, pinto, or Great Northern beans, or edible soybeans, blackeyed, cow, field, or garden peas, cotton, okra, peanuts, or sunflowers.

- Precautionary statements:
  - Labels of manufacturing-use products must bear the statement: Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product to sewer systems without notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.
  - The labels of all end-use products must bear the statement: Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes.

## 5. SUMMARY OF MAJOR DATA GAPS

Data Requested	Due Date*
Statement of composition	6 months
Discussion of formation of impurities	6 months
Preliminary analysis	12 months
Certification of limits	12 months
Analytical methods for enforcement of limits	12 months
Density, bulk density, or specific gravity	6 months
Dissociation constant	6 months
Octanol/water partition coefficient	6 months
pH	6 months
Stability	6 months
Metabolism in plants	24 months
Residue, dill, crop field trials	24 months
Residue, okra, crop field trials	24 months
Hydrolysis	9 months
Photodegradation on soil	9 months
Anaerobic soil	27 months
Leaching and adsorption/desorption	12 months
Field dissipation, soil	27 months
Accumulation, confined rotational crops	39 months
Accumulation, field rotational crops	50 months
Accumulation in fish	12 months
Acute oral toxicity	9 months
Acute dermal toxicity	9 months
Acute inhalation toxicity	9 months
Primary eye irritation	9 months
Primary dermal irritation	9 months
Dermal sensitization	9 months
21-day dermal toxicity	12 months
Chronic toxicity, rodent and non-rodent	50 months
Oncogenicity, 2 species	50 months
Teratogenicity	15 months
Reproduction, 2-generation	39 months
Gene mutation	9 months
Chromosomal aberration	12 months
Other mechanisms of mutagenicity	12 months
General metabolism	24 months

NOTES: \*Number of months after issuance of the Standard.

\*\*A study has been submitted, but not yet reviewed.

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